

SUPPORT FOR THE AMENDMENT

Support for the amendment to claim 6 is found on page 5, lines 7-15, page 7, lines 8-11 and page 11, lines 10-14 of the specification. Support for claim 23 is found in claim 6 as currently amended and on page 11, lines 7-10 of the specification. No new matter would be added to this application by entry of this amendment.

Upon entry of this amendment, claims 6-13 and 23 will now be active in this application.

REQUEST FOR RECONSIDERATION

The claimed invention is directed to a food product comprising an oil composition and food.

Applicants wish to thank examiners Rae and Kwon for the helpful and courteous discussion held with their U.S. representative on May 21, 2008. At that time, applicants' U.S. representative argued that there was no suggestion of a food, in which the oil composition comprised of diglycerides having a content of ω -3 unsaturated acyl groups having at least 20 carbon atoms and monoenoic acyl groups in acyl groups constituting the diglyceride are about 15 to 89.5% by weight and about 10 to 84.5% by weight, respectively. The following is intended to expand upon the discussion with the examiners.

Diglyceride compositions have gained interest based on a disclosed obesity-preventing effect. In addition, ω 3 type unsaturated fatty acids having at least 20 carbon atoms such as docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA), principle components of fish oil triglycerides, have been reported to have beneficial health properties. ω 3 Type unsaturated fatty acid have been reported to have very poor oxidation stability (page 2, lines 17-19 of the specification) while diglycerides of ω 3 type unsaturated fatty acids have exhibited very high viscosities (page 2, line 27 through page 3, line 5 of the specification).

Accordingly, diglyceride containing compositions of ω 3 unsaturated fatty acids having good stability and viscosity are sought.

The claimed invention addresses this problem by providing a food product comprising 1-80 wt. % of an oil composition and food. The oil composition comprising 0.1 to 59.8 wt. % of triglyceride, 40 to 99.7 wt. % of diglyceride and 0.1 to 10 wt. % of monoglyceride, wherein the diglyceride component has 15-89.5 wt. % of ω 3 unsaturated acyl group having at least 20 carbon atoms with 10-84.5 wt% of monoenoic acyl groups, based on the weight of acyl groups in the diglyceride. Applicants have discovered that an oil composition comprising triglyceride, diglyceride and monoglyceride wherein the diglyceride has such a distribution of ω 3 unsaturated fatty acids and monoenoic acyl groups provide for an oil composition having **good stability and viscosity**. Such a food product is nowhere disclosed or suggested in the cited art of record.

The rejection of claims 6, 9, 10 and 11 under 35 U.S.C. § 103(a) over Hartnett, (U.S. 4,250,202) in view of Igarashi U.S. 6,159,507 and further in view of Nomura et al. U.S. 5,160,759 is respectfully traversed.

None of the cited references disclose or suggest the claim limitation of an oil composition comprising 40-99.7 wt. % of diglyceride having 15 to 89.5 wt.% of ω -3 unsaturated acyl groups having at least 20 carbon atoms and 10-84.5% wt.% of monoenoic acyl groups. Each of these components are **unsaturated** fatty acids.

Hartnett describes a cake emulsifier comprising a blend of mono and diglycerides (column 2, lines 24-25). The mono and diglycerides are prepared by transesterification of glycerin and triglyceride in order to produce the desired amount of monoglyceride, residual triglyceride and diglyceride (column 2, lines 50-49). The monoglyceride and therefore the diglyceride is described as “at least 86% **saturated**, that is, at least 80 mol% of the fatty acid molecular segment of the monoglyceride comprises **saturated fatty acids**” (column 2, lines

31- 37). In a **preferred embodiment** the content of saturated fatty acids is **at least 88%** (column 2, lines 37-38). A diglyceride having 15 to 89.5 wt.% of ω -3 unsaturated acyl groups having at least 20 carbon atoms and 10-84.5% wt.% of monoenoic acyl groups is not suggested.

In contrast, the claimed invention is directed to a food product comprising 1-80 wt. % of an oil composition and food wherein the oil component comprises about 40 to 99.7 wt. % of diglyceride wherein the diglyceride component has 15-89.5 wt. % of ω 3 unsaturated acyl group having at least 20 carbon atoms with 10-84.5 wt% of monoenoic acyl groups based on a weight of acyl groups in said diglyceride. Applicants note that the claims have been amended to clarify the various bases for wt. %. ω 3 Unsaturated acyl groups and monoenoic acyl groups are **unsaturated** fatty acids. As the reference **requires at least 86% saturated fatty acids**, (80 mol%) while the claimed invention must have at least 15 wt. % of unsaturated fatty acids (ω -3 unsaturated acyl groups having at least 20 carbon atoms and at least 10 % wt.% of monoenoic acyl groups, a total of at least 25 wt. %) in the diglyceride, the claimed invention could not be suggested. The requirement of the reference to have at least 86% saturated fatty acids is contrary to the claimed invention in which at least 25 wt. % of the fatty acids are **unsaturated** in the diglyceride. Accordingly, the claim limitation of the diglyceride component has 15-89.5 wt. % of ω 3 unsaturated acyl group having at least 20 carbon atoms with 10-84.5 wt% of monoenoic acyl groups would not have been obvious based on Hartnett.

Furthermore, it would not have been obvious to decrease the saturated fatty acid content as the reference recites a preference of a saturated fatty acid content of 88 wt %.

However, while it may ordinarily be the case that the determination of optimum values for the parameters of a prior art process would be at least *prima facie* obvious, that conclusion depends upon what the prior art discloses with respect to those parameters. Where, as here, the prior art disclosure suggests the outer limits of the range of suitable values, and that the optimum resides within that range, and where there are indications elsewhere that in fact

the optimum should be sought within that range, the determination of optimum values outside that range may not be obvious. We think it is not on the facts of this case (*In re Sebek*, 465 F.2d 902, 175 USPQ 93, 95 (CCPA 1972)).

It would not have been obvious to reduce the saturated fatty acid content of Hartnett, and therefore allow for a greater unsaturated fatty acid content, as the reference describes a preference for an oil composition containing an even greater content of saturated fatty acids. The preferred higher content of saturated fatty acid precludes any finding of motivation to reduce the saturated fatty acid content. For at least this reason, the claimed invention would not have been obvious.

The basic deficiencies of the primary reference are not cured by Igarashi or Nomura et al.

The examiner cites to Igarishi for a disclosure of a desire to adjust the ratio of $\omega 6$ unsaturated fatty acids to $\omega 3$ unsaturated fatty acids and concludes that there would have been **motivation to modify** the teaching of Hartnett of a diglyceride composition to arrive at the claimed inventive concept.

Applicants respectfully submit that the reference of Hartnett, as to the content of saturated fatty acids, would preclude any conclusion of obviousness as to a composition which did not contain at least 86 % of saturated fatty acids. Hartnett describes that the fatty acid content should be at least 86% saturated (at least 80 mol %). No modification of such a saturated fatty acid content can be viewed as obvious as to reduce the saturated fatty acid content to be below 86% would be contrary to the teachings of the reference which urges a content of at least 86% saturated fatty acids. It would not have been obvious to have a content of saturated fatty acids below 86%, based on the disclosure of how important such a content is.

Further, the mere suggestion to adjust the **ratio** of $\omega 6$ unsaturated fatty acids to $\omega 3$ unsaturated fatty acids in order to maintain homeostasis of the body, fails to provide any

suggestion of a content of 15-89.5 wt. % of ω 3 unsaturated acyl group having at least 20 carbon atoms and 10-84.5 wt% of monoenoic acyl groups.

Nomura et al. fails to cure the deficiencies of either Hartnett or Igarashi.

The examiner appears to rely on Nomura et al. for a disclosure of a food composition containing diglyceride as well as for a diglyceride composition being prepared from rapeseed oil, asserting, based on the disclosure at column 14, lines 35-45 that one of skill in the art would predict that the Nomura et al. oil composition to “reasonably overlap with the claimed range.” (page 8 of outstanding official action).

Applicants respectfully submit that those of ordinary skill in the art would not “predict” any reasonable overlap with the claimed composition having 15-89.5 wt. % of ω 3 unsaturated acyl group having at least 20 carbon atoms, as the reference identifies rapeseed oil as having **99 wt. %** of acyl groups having less than 20 carbon atoms.

Table 5 of Nomura et al. identifies the rapeseed oil used as having traces of C₁₄ or less, 4.0 wt. % of C₁₆=0, 0.5 wt. % of C₁₆=1, 1.8 wt. % of C₁₆=0 (C₁₆=2 ?), 59.8 wt. % of C₁₈=1, 21.1 wt. % of C₁₈=2 and 12.0 wt. % of C₁₈=3. Such an accounting identifies 99.0 wt. % of the acyl groups as being less than C₂₀. Accordingly, based on the explicit disclosure of the reference, one of ordinary skill in the art would not predict that the oil composition of Nomura et al. would reasonable overlap with a range of 15-89.5 wt. % of ω 3 unsaturated acyl group having at least 20 carbon atoms, since 99 wt. % of the rapeseed oil is comprised of acyl groups being less than C₂₀. The explicit disclosure as to the composition of the rapeseed oil used would preclude any reasonable predictions that the composition would be within the claimed range.

As the cited combination of references does not suggest the claim limitation of a diglyceride composition in which the fatty acids are of 15-89.5 wt. % of ω 3 unsaturated acyl group having at least 20 carbon atoms and 10-84.5 wt% of monoenoic acyl groups the

claimed invention is not rendered obvious over this combination of references and withdrawal of the rejection under 35 U.S.C. § 103(a) is respectfully requested.

The rejection of claims 6-13 under 35 U.S.C. 103(a) over Hartnett. (U.S. 4,250,202) in view of Igarashi U.S. 6,159,507 and further in view of Nomura et al. U.S. 5,160,759 in further view of Brown et al. U.S. 5,288,619, in further view of Ciani *J. Sci. Food Agric.* 1998, 78; 290-0294, in further view of Young et al. U.S. 5,085,884 and in further view of Volpenhein U.S. 4,263,216 is respectfully traversed.

None of the cited references disclose a food composition comprising an oil composition comprising 40 to 99.7 wt. % of diglyceride containing ω 3 unsaturated acyl group having at least 20 carbon atoms and monoenoic acyl groups, as claimed.

The examiner concedes that none of Hartnett, Igarashi or Nomura et al. describe the claim limitations of wine vinegar, potato chips or salad dressing as recited in claims 7, 8, 12 and 13. As the claimed diglyceride composition is not suggested, the claimed invention is not obvious as the examiner has failed to provide evidence for the obviousness of the claim limitation as to the diglyceride composition.

The further references are merely cited to describe oil containing food compositions. However, none of the additional references provide any disclosure or suggestion of 40 to 99.7 wt. % of diglyceride containing ω 3 unsaturated acyl group having at least 20 carbon atoms and monoenoic acyl groups, as claimed.

Brown et al. merely describes the preparation of a **hydrogenated** transesterified stearic acid or stearic acid monoester triglyceride (see Abstract). As a result of hydrogenation unsaturation units as claimed should be destroyed. The reference fails to disclose or suggest the claimed unsaturated acyl groups in a diglyceride.

Ciani merely describes components of food compositions and fail to disclose or suggest the claimed monoenoic acyl group claim limitation.

Young et al. describes a nondigestible fat comprising a nondigestible oil and solid polyol fatty acid polyesters having unsaturated ester groups (see abstract). There is no suggestion of the claimed oil composition comprising triglyceride, diglyceride and monoglyceride.

Volpenhein merely describes the preparation of **saturated diglycerides** (column 3, lines 53-55) as an intermediate toward the manufacture of confectioner's cocoa butter (column 4, lines 43-45).

The secondary references fail to cure the fundamental flaws of the primary references. Since there is no disclosure or suggestion of the claimed diglyceride composition, the claimed invention would not have been obvious over this combination of references and accordingly, withdrawal of the rejection under 35 U.S.C. 103(a) is respectfully requested.

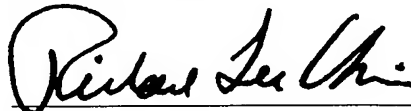
The rejection of claims 6-13 under 35 U.S.C. 112, second paragraph has been obviated by appropriate amendment.

In spite of the examiner's assertion that the claimed composition was indefinite in the absence of a recitation of the relative amount of the oil, composition, the metes and bounds of the claimed invention is clear to those of ordinary skill in the art as the claims clearly recite the presence of an oil composition of defined composition and a food. The metes and bounds of such a food composition would be clear to those of ordinary skill in the art. None, the less, applicants have now amended claim 6 to recite presence of 1-80 wt. % of the oil composition based on the weight of the food composition. In view of applicants' amendment, withdrawal of this ground of rejection is respectfully requested.

Applicants submit that this application is now in condition for allowance and early notification of such action is earnestly solicited.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read "Richard L. Chinn", written over a horizontal line.

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